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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,954	04/15/2004	Manfred Schneegans	2001 P 17353 US	2275
48154	7590	08/29/2006	EXAMINER	
SLATER & MATSIL LLP 17950 PRESTON ROAD SUITE 1000 DALLAS, TX 75252			PATEL, PARESH H	
			ART UNIT	PAPER NUMBER
			2829	

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/826,954

Applicant(s)

SCHNEEGANS ET AL.

Examiner

Paresh Patel

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-4, 6, 8, 11-15 and 18-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-4, 6, 8, 11-15, 18-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

Claim 6 is objected to because of the following informalities: "the contact member" at line 2 of claim 6 should read --the contact tip--. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 6, 2-4, 8, 11-15, 18-20 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doezema et al. (US 6198300).

Regarding claims 6, 11, 18, 20 and 22-23, Doezema et al. (hereafter Doezema) in fig. 1 and 15 discloses a probe needle for testing semiconductor chips, the probe needle comprising:

A substantially linear elongated member [cantilever 20];

A contact tip (**body of claims 22-23**) [Si] attached at the free end of the substantially linear elongated member, wherein at least a portion of the surface of the contact is provided with titanium nitride coating [TiN]; and an adhesive layer of titanium arranged beneath the titanium nitride layer so that adhesive layer is between the surface of the contact tip and the titanium nitride layer. Doezema also discloses a

semiconductor wafer [wafer] and an electrical test (**for claim 18**) [lines 52-65 of column 7] on an individual semiconductor chip (**for claim 20**) [chip, see lines 1-5 of column 4].

Doezema discloses all the elements but is silent about a substantially linear elongated member including a **fixed end that is fastened in a holding element**. It would have been obvious to one of the ordinary skill in the art at the time the invention was made to have substantially linear elongated member including a fixed end that is fastened in a holding element, since it was known in the art that cantilever has one free end and other end, which is fixed to a holding device to support the cantilever while in use e.g. testing (for cantilever probe and fixed end, also see US Pat. 5073117, US Pat. 5172050, US Pat. 4961052, US Pat. 4916002, US Pat. 4312117, US Pat. 4189825, US Pat. 6426638).

Regarding claim 2, Doezema discloses a first surface [bottom of Si] as further claimed.

Regarding claim 3, Doezema discloses the entire surface of the contact tip is provided with the coating [i.e. TiSi<sub>2</sub> and Tin].

Regarding claims 4 and 8, Doezema discloses the entire surface of the probe needle is provided with the coating [i.e. TiSi<sub>2</sub> and Tin, see fig. 15].

Regarding claims 12-14, which are product-by-process, Doezema discloses manufacturing process (<sup>starting</sup> ~~stating~~ at line 20 of column 9) including chemical vapor deposition for coating.

Regarding claim 15, Doezema discloses stoichiometry at lines 57-58 of column 8 for resistivity values. Doezema discloses all the elements but is silent about the titanium

nitride comprises titanium nitride with stoichiometric ratio of Ti:N = 1. It would have been obvious matter of design choice to choose stoichiometric ratio of Ti:N = 1 as further claimed here, since it is desirable that the tip demonstrates different properties like chemically stability etc. during thermal process (see lines 39-65 of column 8 for thermal process and resistivity).

Regarding claim 19, Doezenia discloses all the elements but is silent about packaging the semiconductor device after performing the electrical test. Packaging the semiconductor device after performing the electrical test is well known in the art at the time the invention was made, for mounting the component on a printed circuit board or for shipping.

3. Claims 6, 2-4, 8, 11-15 and 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al. (US 5594166) and Doezenia et al. (US 6198300).

Regarding claims 6, 11, 18 and 20-26 Itoh et al. (hereafter Itoh) discloses a probe needle in fig. 5(e) with A substantially linear elongated member [12]; a contact tip **(body of claims 22-23 and 25-26)** [13] and a holding element **(probe card for claims 21 and 24)** [11]. Itoh discloses all the elements except for at least a portion of the surface of the contact is provided with titanium nitride coating; and an adhesive layer of titanium arranged beneath the titanium nitride layer so that adhesive layer is between the surface of the contact tip and the titanium nitride layer. Doezenia et al. (hereafter Doezenia) in fig. 1 and 15 discloses a probe needle for testing semiconductor chips, the probe needle comprising:

A substantially linear elongated member [cantilever 20];

A contact tip [Si] attached at the free end of the substantially linear elongated member, wherein at least a portion of the surface of the contact is provided with titanium nitride coating [TiN]; and an adhesive layer of titanium arranged beneath the titanium nitride layer so that adhesive layer is between the surface of the contact tip and the titanium nitride layer. Doezenia also discloses a semiconductor wafer [wafer] and an electrical test (**for claim 18**) [lines 52-65 of column 7] on an individual semiconductor chip (**for claim 20**) [chip, see lines 1-5 of column 4].

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the contact tip of Itoh with **an adhesive layer of titanium** is between the surface of the contact tip and **the titanium nitride layer**, as taught by Doezenia, in order to make the contact tip stiffer for higher mechanical compliance during testing.

Regarding claim 2, Itoh discloses a first surface [bottom of 13] as further claimed or Doezenia discloses a first surface [bottom of Si] as further claimed.

Regarding claim 3, Doezenia discloses the entire surface of the contact tip is provided with the coating [i.e. TiSi<sub>2</sub> and TiN].

Regarding claims 4 and 8, Doezenia discloses the entire surface of the probe needle is provided with the coating [i.e. TiSi<sub>2</sub> and TiN, see fig. 15].

Regarding claims 12-14, which are product-by-process, Doezenia discloses manufacturing process (stating at line 20 of column 9) including chemical vapor deposition for coating.

Regarding claim 15, Doezenia discloses stoichiometry at lines 57-58 of column 8 for resistivity values. Doezenia discloses all the elements but is silent about the titanium nitride comprises titanium nitride with stoichiometric ratio of Ti:N = 1. It would have been obvious matter of design choice to choose stoichiometric ratio of Ti:N = 1 as further claimed here, since it is desirable that the tip demonstrates different properties like chemically stability etc. during thermal process (see lines 39-65 of column 8 for thermal process and resistivity).

Regarding claim 19, Doezenia discloses all the elements but is silent about packaging the semiconductor device after performing the electrical test. Packaging the semiconductor device after performing the electrical test is well known in the art at the time the invention was made, for mounting the component on a printed circuit board or for shipping.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paresh Patel whose telephone number is 571-272-1968. The examiner can normally be reached on 8:00 to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on 571-272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2829

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Paresh Patel *08/25/06*  
Primary Examiner  
Art Unit 2829

August 25, 2006